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MILK DEALERS' SALES AND COSTS:

A Trend Analysis, 1952-77

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Changes in plant operation and new technology have helped fluid-milk processor-distributors hold down operating costs. Processors now obtain more milk in large tankers from a central supply rather than from individual producers. Processing plant volume has tripled, with resulting economies of scale. Clean-in-place equipment contributes to more efficient use of labor. Home-delivery routes are being discontinued in favor of lower cost wholesale delivery. Processor-distributor operating costs in 1977 were $6.47 per hundredweight of fluid processed. Those costs would have been $11.27, 74.2 percent higher, without these and other changes in operations and facilities.

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Milk Dealers' Sales and Costs: A Trend Analysis, 1952-77

*Floyd A. Lasley, Webster Jones, Leah Sitzman**

INTRODUCTION

Fluid-milk processor-distributors have been able to hold down the influence of input price increases on processing and distribution costs by adjusting their operations and using new technology. This report examines these dealers' sales and costs for 1972-77, and compares them with those of 1952-64. 1/ The comparison provides a general overview of changes in the costs of processing and distributing milk during the past quarter century. These comparisons also provide some indication of future cost pressures for milk dealers.

All major geographic areas of the country are represented. The firms selected are considered to be representative of moderate-size, single-plant fluid processor-distributors. Very small firms, national chains, and producer-distributors are not included.

Individual processor-distributors of fluid milk provide cost and sales data to a cost comparison and consulting service to which they subscribe as clients. That organization then provides data for selected distributors to the U.S. Department of Agriculture for analysis. The processor-distributor firms have worked with the consulting service over a period of time and use a unified accounting system, making the data more useful than if the same number of plants were selected at random for a one-time comparison.

Data for 30 plants are included in this report. Most of these plants were the same throughout the 1972-77 period. Some substitutions were necessary, however, because a particular plant may not have provided necessary data during a certain period, or a plant may have dropped out of the study. Substitute plants were comparable to those that were replaced.

The earlier reports analyzed from 43 plants in 1952 to 83 plants in 1955, with an average of 73 plants during the 1952-64 period (table 1). Ten of the individual plants for 1975 were also included in 1955. Those 10 plants increased their average volume from 5.5 million pounds per quarter in 1955 to 16.6 million per quarter in

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1/ Results of studies on processor-distributors' sales and costs during 1952-64 were reported in 25 quarterly reports titled, "Milk Dealers' Sales and Costs" and numbered MDSC-1 through 25, and in Milk Distributors' Operations: Analysis of Growth, Sales, Distribution, Costs, and Profits, ERS-84, U.S. Dept., Agr., Econ. Res. Serv., Nov. 1962. These publications are out of print, so portions of the data are presented for information and comparisons.

Table 1--Number of fluid-milk processing plants and volumes processed 1/

Year	Total U.S. commercial fluid processing plants			Fluid processing plants in study		
	Plants	Volume processed	Average annual volume per plant	Plants	Volume processed	Average annual volume per plant
	Number	Million pounds	1,000 pounds	Number	Million pounds	1,000 pounds
1952	7,508	37,538	5,000	43	818	19,031
1953	7,238	38,660	5,341	51	1,058	20,743
1954	6,979	40,374	5,785	75	1,590	21,200
1955	6,726	42,166	6,269	83	1,926	23,200
1956	6,472	43,942	6,790	80	1,942	24,280
1957	6,187	45,191	7,304	80	2,071	25,882
1958	5,888	45,690	7,760	80	2,162	27,024
1959	5,571	46,289	8,309	80	NA	NA
1960	5,328	47,060	8,833	80	2,329	29,117
1961	4,959	47,086	9,495	80	NA	NA
1962	4,683	48,063	10,263	80	NA	NA
1963	4,442	49,456	11,134	70	NA	NA
1964	4,103	50,509	12,310	70	NA	NA
1965	3,743	51,383	13,728	NA	NA	NA
1970	2,216	52,709	23,786	NA	NA	NA
1972	1,898	54,240	28,577	30	1,791	59,695
1973	1,701	54,128	31,821	30	2,002	66,729
1974	1,571	52,786	33,621	30	1,978	65,933
1975	1,494	54,426	36,430	30	2,158	71,948
1976	1,439	54,445	37,835	30	2,201	73,368
1977	1,349	54,398	40,325	30	2,582	86,058

NA = Not available.

1/ Volume for national data represents fluid-milk products only. Volumes for plants in study include total volume of milk and cream processed for years 1952-60 and fluid volume processed for years 1972-77. These factors alter these comparisons by less than 5 percent.

1975--a threefold increase. Plants in this study typically handled three times the volume of milk as did plants in the earlier period. These 30 plants processed a total of about 2.6 billion pounds of milk per year during 1977, about 34 percent more than the 83 plants processed in 1955. The average volume processed per plant in 1977 was 21.5 million pounds per quarter, compared with 5.8 million pounds per quarter in 1955. The average fluid plant regulated by Federal Milk Marketing Orders in 1970 processed about 6.9 million pounds per quarter. 2/ Only 44 percent of the Federal Order plants processed more than 3 million pounds quarterly, but they processed more than 90 percent of the total volume. Those plants processing more than 3 million pounds per quarter averaged 14.7 million pounds per quarter.

There is a minor difference in the basic plant-volume data between the two time periods. Both series consider pounds of input into fluid products, cottage cheese, and ice cream. Volume, unit sales, and cost data were previously based on the hundredweight of raw milk and cream only. Now, the basic volume for determining unit costs is the total hundredweight of milk and other liquid materials processed. The difference is small; in 1977, the 30 plants processed about 2 percent more total liquid materials than they did milk and cream. Comparisons are made without adjusting for the difference.

NET SALES RECEIPTS

Dealers' net sales receipts per hundredweight (cwt) of fluid product processed increased 43 percent during 1972-77, rising from $13.87 to $19.83 (tables 2 and 3). Sales and major costs during the high inflationary period of 1973-75 sometimes changed more during the year than they had during all of the fifties or sixties.

Dealers' annual net sales were stable during 1952-64, varying only 68 cents ($10.69 to $11.37) per cwt processed during that 13-year period. Part of that stability, even while other prices were rising, resulted in a shift from the higher priced home delivery to lower priced wholesale outlets and from a decreased proportion of sales from ice cream as the dealers became more specialized. Those two factors tended to offset the increase in wholesale and retail prices, thereby giving dealers more stable sales receipts per unit than they would have realized otherwise. Those two adjustments had been mostly completed by 1972, so they gave little moderating effect to the rapidly rising wholesale and retail prices of 1973-75.

COST OF MATERIALS FOR PROCESSING AND RESALE

The cost of materials for processing and resale, mostly raw milk and cream for processing, jumped from $8.45 per cwt processed in 1972 to $12.99 in 1977 (table 2). This 54-percent increase contrasts with a 14-percent decline during 1952-64, with most of the decrease occurring during 1953-54.

Raw milk and cream constituted about 80 percent of the total cost of materials during 1972-77. Processors in 1972 paid 46.8 cents of each dollar received from total sales for raw milk and cream, less than during the early fifties, but more than during the early sixties (table 4). Rapid changes in milk prices raised this to 53.5 cents per dollar in 1974; it then eased back to 51.2 cents in 1977.

2/ Alden C. Manchester, Market Structure, Institutions, and Performance in the Fluid Milk Industry, AER-248, U.S. Dept. Agr., Econ. Res. Serv., Jan. 1974.

Table 2--Yearly average of net sales receipts, costs, and margins for selected fluid-milk processors per hundredweight of fluid volume processed 1/

Item	1952	1953	1954	1955	1956	1957	1958	1959	1960
	Dollars								
Net sales receipts 3/	11.32	11.12	10.69	10.95	11.22	11.15	11.05	11.16	11.25
Cost of materials for processing and resale:									
Raw milk and cream	5.85	5.43	5.07	5.12	5.39	5.23	5.13	5.10	5.11
Other	.82	.86	.83	.89	.76	.77	.70	.80	.87
Total	6.67	6.29	5.90	6.01	6.15	6.00	5.83	5.90	5.98
Gross margins	4.65	4.83	4.79	4.94	5.07	5.15	5.22	5.26	5.27
Operating costs:									
Salaries, wages, and commissions 4/	2.15	2.19	2.21	2.28	2.43	2.50	2.56	2.61	2.62
Containers	.60	.62	.65	.70	.72	.71	.70	.69	.66
Rent, repairs, and depreciation	.50	.52	.57	.60	.64	.67	.68	.67	.66
Operating supplies	.30	.32	.35	.32	.28	.29	.29	.29	.30
Services	.16	.19	.19	.18	.17	.17	.17	.17	.18
Advertising	.15	.15	.16	.18	.19	.18	.18	.18	.18
Taxes	.06	.06	.06	.06	.05	.06	.06	.06	.06
Insurance	.02	.02	.03	.04	.04	.04	.04	.04	.05
Other	.15	.13	.13	.14	.16	.15	.16	.16	.15
Total	4.09	4.20	4.35	4.50	4.68	4.77	4.84	4.87	4.86
Net margins 5/	.56	.63	.44	.44	.39	.38	.38	.39	.41

See footnotes at end of table.

Continued--

Table 2--Yearly average of net sales receipts, costs, and margins for selected fluid-milk processors per hundredweight of fluid volume processed 1/--Continued

Item	1961	1962 2/	1963 2/	1964 2/	1972	1973	1974	1975	1976	1977
					Dollars					
Net sales receipts 3/	11.37	11.17	10.93	10.78	13.87	14.29	17.35	19.54	19.85	19.83
Cost of materials for processing and resale:										
Raw milk and cream	5.02	4.98	5.01	4.81	6.49	7.24	9.29	9.81	10.26	10.15
Other	.95	.97	.96	1.07	1.96	1.89	2.38	2.73	2.59	2.84
Total	5.97	5.95	5.97	5.88	8.45	9.13	11.67	12.54	12.85	12.99
Gross margins	5.40	5.22	4.96	4.90	5.42	5.16	5.68	7.00	7.00	6.84
Operating costs:										
Salaries, wages, and commissions 4/	2.67	2.55	2.43	2.43	2.63	2.46	2.59	2.93	3.00	2.97
Containers	.67				.81	.81	1.01	1.27	1.28	1.29
Rent, repairs, and depreciation	.68				.74	.68	.79	.90	.90	.90
Operating supplies	.30				.32	.30	.33	.40	.42	.42
Services	.19	2.39	2.33	2.28	.24	.22	.24	.29	.30	.37
Advertising	.19				.16	.13	.14	.15	.16	.15
Taxes	.06				.08	.08	.09	.09	.10	.10
Insurance	.05				.10	.07	.05	.06	.05	.07
Other	.16				.17	.14	.16	.18	.19	.20
Total	4.97	4.94	4.76	4.71	5.25	4.89	5.40	6.27	6.40	6.47
Net margins 5/	.43	.28	.20	.19	.17	.27	.28	.73	.60	.37

1/ Per hundredweight of milk and cream processed during 1952-64, and per hundredweight of total fluid volume (about 2 percent greater than milk and cream) processed during 1972-77. 2/ Estimated on the basis of available quarterly data, seasonally adjusted. Individual amounts are not available for all operating-cost items, so totals are shown. 3/ Gross sales receipts less discounts, allowances, and returns. 4/ Includes State unemployment, Federal old age, workmen's compensation, and employee benefits. 5/ Net returns to owners before income taxes.

Table 3--Quarterly average of net sales receipts, costs, and margins for selected fluid-milk processors per hundredweight of fluid volume processed

Item	1972				1973				1974			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
	Dollars											
Net sales receipts 1/	13.84	14.10	13.72	13.84	13.77	13.91	14.07	15.45	16.03	17.03	17.99	18.37
Cost of materials for processing and resale:												
Raw milk and cream	6.62	6.33	6.35	6.67	6.72	6.73	7.24	8.29	9.09	9.17	9.50	9.43
Other	1.68	2.05	2.16	1.94	1.79	1.93	1.93	1.89	1.85	2.38	2.71	2.62
Total	8.30	8.38	8.51	8.61	8.51	8.66	9.17	10.18	10.94	11.55	12.21	12.05
Gross margins	5.54	5.72	5.21	5.23	5.26	2.25	4.90	5.27	5.09	5.48	5.78	6.32
Operating costs												
Salaries, wages, and commissions 2/	2.58	2.71	2.67	2.57	2.61	2.46	2.38	2.41	2.39	2.55	2.73	2.73
Containers	.81	.83	.81	.77	.81	.80	.83	.79	.84	.96	1.12	1.14
Rent, repairs and depreciation	.71	.75	.73	.74	.68	.68	.66	.67	.68	.73	.86	.88
Operating supplies	.32	.31	.33	.33	.33	.31	.29	.29	.30	.33	.36	.32
Services	.23	.26	.25	.23	.22	.21	.24	.22	.23	.24	.28	.24
Advertising	.15	.16	.16	.16	.12	.13	.13	.13	.11	.12	.17	.17
Taxes	.09	.08	.08	.09	.07	.08	.08	.09	.09	.08	.09	.09
Insurance	.14	.09	.09	.09	.08	.09	.05	.05	.05	.05	.06	.04
Other	.17	.18	.17	.16	.14	.14	.14	.14	.14	.16	.15	.19
Total	5.20	5.37	5.29	5.14	5.06	4.90	4.80	4.79	4.83	5.22	5.82	5.80
Net margins 3/	.34	.35	-.08	.09	.20	.35	.10	.48	.26	.26	-.04	.52

See footnotes at end of table.

Continued--

Table 3--Quarterly average of net sales receipts, costs, and margins for selected fluid-milk processors per hundredweight of fluid volume processed--Continued

Item	1975				1976				1977			
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
	Dollars											
Net sales receipts 1/	18.90	19.47	19.60	20.15	19.35	20.06	20.03	19.96	19.33	19.77	20.07	20.12
Cost of materials for processing and resale:												
Raw milk and cream	9.82	9.45	9.52	10.63	10.24	10.14	10.10	10.43	10.04	10.02	10.18	10.35
Other	2.68	2.87	2.81	2.32	2.43	2.79	2.67	2.35	2.60	2.89	3.00	2.89
Total	12.50	12.32	12.33	12.95	12.67	12.93	12.77	12.78	12.64	12.91	13.18	13.24
Gross margins	6.40	7.15	7.27	7.20	6.68	7.13	7.26	7.18	6.69	6.86	6.89	6.88
Operating costs												
Salaries, wages and commissions 2/	3.00	2.85	2.98	2.89	2.88	3.13	3.04	2.97	2.86	2.95	3.02	3.06
Containers	1.28	1.28	1.27	1.28	1.26	1.32	1.28	1.25	1.25	1.32	1.26	1.32
Rent, repairs and depreciation	.90	.87	.89	.90	.90	.91	.91	.91	.86	.91	.94	.92
Operating supplies	.39	.39	.42	.42	.42	.42	.45	.40	.41	.41	.43	.43
Services	.29	.27	.31	.29	.28	.31	.31	.29	.35	.35	.39	.39
Advertising	.14	.15	.14	.18	.16	.17	.15	.14	.13	.16	.14	.15
Taxes	.08	.08	.09	.11	.12	.07	.09	.09	.08	.10	.10	.10
Insurance	.05	.07	.06	.06	.05	.05	.05	.07	.07	.07	.08	.07
Other	.18	.17	.17	.21	.21	.17	.18	.20	.23	.18	.17	.21
Total	6.31	6.13	6.33	6.34	6.28	6.55	6.46	6.32	6.24	6.45	6.53	6.65
Net margins 3/	.09	1.02	.94	.86	.40	.58	.80	.86	.45	.41	.36	.23

1/ Gross sales receipts less discounts, allowances, and returns.
2/ Includes State unemployment, Federal old age, workmen's compensation, and employee benefits.
3/ Net returns to owners before income taxes.

Table 4--Yearly average costs and margins for selected fluid-milk processors as a percentage of net sales

Item	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962 1/	1963 1/	1964 1/	1972	1973	1974	1975	1976	1977
	Percent																		
Net sales receipts	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cost of materials for processing and resale	58.9	56.6	55.2	54.9	54.8	53.8	52.8	52.9	53.2	52.5	53.3	54.6	54.5	60.9	63.9	67.3	64.2	64.8	65.5
Raw milk and cream	51.7	48.8	47.4	46.8	48.0	46.9	46.5	45.7	45.5	44.1	44.6	45.8	44.6	46.8	50.7	53.6	50.2	51.7	51.2
Other	7.2	7.8	7.8	8.1	6.8	6.9	6.3	7.2	7.7	8.4	8.7	8.8	9.9	14.1	13.2	13.7	14.0	13.1	14.3
Gross margins	41.1	43.4	44.8	45.1	45.2	46.2	47.2	47.1	46.8	47.5	46.7	45.4	45.5	39.1	36.1	32.7	35.8	35.2	34.5
Operating costs	36.1	37.8	40.7	41.1	41.7	42.8	43.8	43.6	43.2	43.7	44.2	43.6	43.7	37.9	34.2	31.1	32.1	32.2	32.6
Salaries, wages, and commissions	19.0	19.7	20.7	20.8	21.7	22.4	23.2	23.4	23.3	23.5	22.8	22.2	22.5	19.0	17.2	14.9	15.0	15.1	15.0
Containers	5.3	5.6	6.1	6.4	6.4	6.4	6.3	6.2	5.9	5.9				5.9	5.7	5.8	6.5	6.4	6.5
Facilities 2/	5.1	5.4	6.1	6.4	6.5	6.9	7.1	6.9	6.8	6.9				6.6	5.8	5.4	5.3	5.3	5.4
Operating supplies and other	4.0	4.0	4.5	4.2	3.9	4.0	4.1	4.0	4.0	4.0	21.4	21.4	21.2	3.5	3.1	2.8	3.0	3.1	3.1
Services	1.4	1.7	1.8	1.7	1.5	1.5	1.5	1.5	1.6	1.7				1.7	1.5	1.4	1.5	1.5	1.8
Advertising	1.3	1.4	1.5	1.6	1.7	1.6	1.6	1.6	1.6	1.7				1.2	.9	.8	.8	.8	.8
Net margins	5.0	5.6	4.1	4.0	3.5	3.4	3.4	3.5	3.6	3.8	2.5	1.8	1.8	1.2	1.9	1.6	3.7	3.0	1.9

1/ Individual amounts are not available for all operating-cost items, so totals are shown.
2/ Rent, repairs, depreciation, taxes, and insurance.

The cost of materials other than raw milk and cream purchased for processing plus finished goods purchased for resale ranged from 13.1 to 14.3 cents of the sales dollar during 1972-77. This cost level continued an upward trend during the sixties. The change resulted primarily from increasing specialization by fluid processors that caused them to purchase more finished products for resale. This tendency more than offset the downward effect of decreasing sales through home delivery.

PROCESSORS' MARGINS

The main characteristic of processors' gross margins during the 1952-64 period was stability--the result of stable sales and stable cost of materials. In contrast, gross margins during 1972-77 fluctuated widely from quarter to quarter and year to year (table 3). That fluctuation was set off by rapid changes in milk prices at all levels and in most input prices. Quarterly data for 1977 indicate that gross margins may have stabilized again at a higher level. Gross margins as a percentage of the sales dollar, however, were substantially lower during 1972-77 than during 1952-64, as costs for both raw milk and cream and products purchased for resale increased (table 4).

Processors' net margins had greater relative variability than any other component during both time periods, particularly during 1972-77; price changes were extreme during 1973-75. Processors realized lower net margins in 1972 than in any other period covered by the data. They experienced net losses for the third quarter in both 1972 and 1974, despite processor adjustments during that critical period. Their net margins improved markedly in 1975 and 1976, primarily as a result of increasing sales receipts and slower rises both in the cost of materials and in operating costs. Net margins dropped again in 1977, however, as those changes reversed.

OPERATING COSTS

Operating costs rose $1.22 per cwt of fluid volume processed during 1972-77, rising from $5.25 to $6.47 (table 2). This contrasts with only a 62-cent net increase during 1952-64.

Labor Costs

Labor continued to be the major component of operating costs during 1972-77, although not quite as dominant as earlier. Labor represented 51.6 percent of total operating costs in 1964, but dropped to 45.9 percent by 1977 despite increases in wage rates and fringe benefits (table 5). Had unit labor costs risen in direct proportion to other costs since 1960, processors' operating costs would have been $1.12 more per cwt (10 cents per gallon) in 1977.

Labor costs accounted for 59.1 percent of the increase in operating costs between 1952 and 1961. Readjustments in processing and distribution helped stem the rising labor costs, starting with a 12-cent-per-hundredweight drop in 1962, followed by another 12-cent decline in 1963. These adjustments proved so effective that, although dairy industry wage rates had increased by 52 percent between 1964 and 1972, unit labor costs increased less than 10 percent during that period. The 1973 unit labor cost, averaging $2.46 per cwt, was but 27 cents above that of 20 years earlier (table 2). However, 1973 proved to be another turning point, and unit labor costs began rising again, although somewhat less than proportional to the rise in total operating costs. Labor costs averaged $2.97 per cwt processed by 1977, 45.9 percent of the total operating cost.

Container Costs

Container costs, second only to labor, accounted for 19.9 percent of total operating costs in 1977 (table 5). Container costs moved up rapidly in 1974 and 1975. They were half again as high in 1975 as in 1972-73 when these costs had held stable at about 81 cents per cwt processed (15.4 and 16.6 percent of operating costs in 1972 and 1973, respectively). Container costs increased more in each of the two middle quarters of 1974 than during all of the fifties or the sixties.

Rent, Repairs, and Depreciation

Rent, repairs, and depreciation, which deal with providing and maintaining physical facilities, about kept pace with total costs. These three items made up about 14 percent of operating costs in 1977, having risen gradually from 50 cents per cwt in 1952 to 90 cents in 1977. New technology let milk dealers process and distribute more volume per plant and per unit of labor. Strong competitive pressure

Table 5--Components of operating costs as percentage of total operating costs for selected fluid-milk processors

Year	Salaries, wages, and commissions	Containers	Facilities 1/	Operating supplies and other	Services	Advertising	Total operating costs
			Percent				
1952	52.5	14.7	14.2	11.0	3.9	3.7	100.0
1953	52.1	14.8	14.3	10.7	4.5	3.6	100.0
1954	50.8	14.9	15.2	11.0	4.4	3.7	100.0
1955	50.7	15.6	15.5	10.2	4.0	4.0	100.0
1956	51.9	15.4	15.6	9.4	3.6	4.1	100.0
1957	52.4	14.9	16.1	9.2	3.6	3.8	100.0
1958	52.9	14.5	16.1	9.3	3.5	3.7	100.0
1959	53.6	14.2	15.8	9.2	3.5	3.7	100.0
1960	53.9	13.6	15.8	9.3	3.7	3.7	100.0
1961	53.7	13.5	15.9	9.3	3.8	3.8	100.0
1962	51.6	NA	NA	NA	NA	NA	100.0
1963	51.1	NA	NA	NA	NA	NA	100.0
1964	51.6	NA	NA	NA	NA	NA	100.0
1972	50.1	15.4	17.5	9.3	4.6	3.1	100.0
1973	50.3	16.5	17.0	9.0	4.5	2.7	100.0
1974	48.0	18.7	17.2	9.1	4.4	2.6	100.0
1975	46.7	20.3	16.8	9.2	4.6	2.4	100.0
1976	46.9	20.0	16.4	9.5	4.7	2.5	100.0
1977	45.9	19.9	16.6	9.6	5.7	2.3	100.0

NA = Not available.
1/ Rent, repairs, depreciation, taxes, and insurance.

for rapid adoption of the more advanced technology came from new entrants with very large, efficient plants. Heavy capital outlays were required, but the resulting economies of size had a stabilizing influence on total unit costs.

Other Costs

The cost of operating supplies also has been rather steady, rising only 3 cents per cwt of fluid processed (from 30 to 33 cents) between 1952 and 1974 (table 2). The cost of these supplies rose to 40 cents per cwt in 1975 and was at 42 cents per cwt in 1977, only a 40-percent increase in the quarter century. That increase was well below the rate of increase for total costs, and the proportion represented by operating supplies declined from 7.3 to 6.5 percent from 1952 to 1977.

Services purchased (primarily utilities) were 37 cents per cwt in 1977, having doubled since the fifties and sixties; most of that rise occurred during 1975-77.

Advertising costs were lower in the seventies than they were earlier. This decline resulted mainly from the shift away from home delivery to wholesale outlets, with a high proportion of private-label packaging. Advertising costs ranged from 3.6 to 4.1 percent of total operating costs between 1952 and 1964. Advertising was down to 2.3 percent of total operating costs in 1977, the smallest share throughout both study periods.

Processors, by expanding their volume, held taxes and insurance costs to a range of 14 to 18 cents per cwt during the seventies, despite rising rates, assessments, and facility values.

PRODUCTIVITY GAINS

Fluid-milk processor-distributors experienced rising costs during almost the entire quarter century spanned by these data. Total operating costs per cwt of fluid processed rose from $4.09 in 1952 to $4.71 in 1964, $5.25 in 1972, and $6.65 in the last quarter of 1977. Overall, unit operating costs rose over 60 percent, with half of that rise occurring from mid-1974 to 1976. Comparing this long-term increase with general economic measures indicates that unit operating costs increased at a lower rate than did the wholesale and consumer price indices, the wage rates for dairy-plant workers, the price of dairy equipment, and the price of energy. Input prices increased fairly regularly between 1952 and 1972, after which both the rate of increase and the differential between inputs became more pronounced (table 6).

The year 1960 (a time when unit operating costs were relatively stable) is used as a base to compare actual unit costs over time with what those costs would have been without industry adjustments in equipment and technology (table 7). The 1960 base is multiplied by the appropriate price index in table 6 to show the effect of rising input prices.

Actual operating costs per cwt of fluid processed were $4.86 in 1960, $4.71 in 1964, $5.25 in 1972, and $6.47 in 1977. The simulated costs are $5.24, $7.48, and $11.27 for the latter 3 years, respectively. Without the adjustments in processing and distribution, operating costs in 1977 would have been 74.2 percent higher than they actually were.

Adjustments were most effective in controlling labor costs, the dominant component of operating costs. Actual unit labor costs were at about the same level in 1964 and 1973. Had unit labor costs increased at the same rate as wages, those labor costs in 1977 would have been within 6 cents of what the total operating costs actually were

Table 6--Indices of operating costs, prices for wholesale and consumer goods, dairy products (consumer), and selected inputs used by the dairy industry (wholesale)

Year	Operating cost index 1/	Wholesale price index	Consumer price index	Dairy products 2/	Hourly wage rate, fluid milk 3/	Intermediate goods 4/	Containers and packaging 4/	Fuel, power, and light 4/	Services 4/	New plant and equipment 4/
					1960=100 5/					
1952	84.2	93.4	95.1	95.5	68.3	86.6	85.4	86.9	80.2	80.2
1953	86.4	92.1	94.8	93.8	72.5	87.6	85.4	87.9	84.0	81.3
1954	89.5	92.3	93.9	90.8	75.4	87.6	86.5	88.9	85.2	82.4
1955	92.6	92.5	93.0	90.7	78.7	88.7	87.5	88.9	86.4	83.5
1956	96.3	95.6	93.9	93.1	83.4	92.7	92.7	91.9	88.9	89.0
1957	98.1	98.3	96.8	95.8	87.7	96.9	96.9	98.0	92.6	94.5
1958	99.6	99.7	99.0	97.2	93.2	97.9	97.9	95.9	96.3	96.7
1959	100.2	99.9	99.1	97.9	96.3	97.9	97.9	95.9	98.8	98.9
1960	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1961	102.3	99.6	100.5	101.6	103.2	99.0	99.0	101.0	101.2	100.0
1962	101.6	99.9	101.4	100.9	106.8	99.0	100.0	101.0	103.7	101.1
1963	97.9	99.6	102.3	100.6	110.5	99.0	99.0	100.0	106.2	101.1
1964	96.9	99.8	103.4	101.5	114.2	97.9	100.0	99.0	108.6	102.2
1965	NA	101.8	104.6	101.8	117.8	99.0	101.0	100.0	112.3	104.4
1966	NA	105.2	107.3	108.4	121.9	102.1	103.1	100.0	117.3	106.6
1967	NA	105.4	109.3	113.1	127.4	103.1	104.2	101.0	123.5	109.9
1968	NA	108.0	113.9	116.9	135.2	103.1	104.2	100.0	130.9	113.2
1969	NA	112.2	120.0	120.7	145.2	106.2	108.3	100.0	139.5	117.6
1970	NA	116.3	127.1	126.5	156.2	111.3	112.5	109.1	148.1	120.9
1971	NA	120.0	132.6	130.4	164.4	116.5	117.7	121.2	159.3	127.5
1972	108.0	125.5	136.9	132.5	173.5	121.6	121.9	127.3	170.4	133.0
1973	100.6	141.9	145.5	144.7	183.6	128.9	128.1	139.4	179.0	138.5
1974	111.1	168.7	161.4	171.8	198.2	166.0	157.3	203.0	193.8	152.7
1975	129.0	184.3	176.2	177.1	215.5	191.8	181.2	239.4	212.3	175.8
1976	131.7	192.8	186.3	191.5	232.4	204.1	191.7	260.6	229.6	184.6
1977	133.1	204.6	198.4	196.7	244.7	222.7	203.1	313.1	245.7	193.4

NA = Not available. 1/ Computed from data in table 2. 2/ From consumer price index. 3/ Hourly wage rate for fluid-milk industry for 1959-76; wage rate for food-products industry 1952-58, adjusted to 1960 base. 4/ From wholesale price index. 5/ Converted from Bureau of Labor statistics.

Table 7--Simulated annual processing costs for fluid-milk industry without productivity increase 1/

Year	Salaries, wages, and commissions	Containers	Operating supplies	Rent, repairs, depreciation	Taxes	Insurance	Advertising	Services	Other	Total
					Dollars					
1952	1.79	0.56	0.26	0.53	0.05	0.04	0.14	0.16	0.13	3.66
1953	1.90	.56	.26	.54	.05	.04	.15	.16	.13	3.79
1954	1.98	.57	.26	.54	.05	.04	.15	.16	.13	3.88
1955	2.06	.58	.27	.55	.05	.04	.16	.16	.13	4.00
1956	2.19	.61	.28	.59	.05	.05	.16	.17	.14	4.24
1957	2.30	.64	.29	.62	.06	.05	.17	.18	.15	4.46
1958	2.44	.65	.29	.64	.06	.05	.17	.17	.15	4.62
1959	2.52	.65	.29	.65	.06	.05	.18	.17	.15	4.72
1960 2/	2.62	.66	.30	.66	.06	.05	.18	.18	.15	4.86
1961	2.70	.65	.30	.67	.06	.05	.18	.18	.15	4.94
1962	2.80	.65	.30	.67	.06	.05	.19	.18	.15	5.05
1963	2.90	.65	.30	.67	.06	.05	.19	.18	.15	5.15
1964	2.99	.65	.29	.67	.06	.05	.20	.18	.15	5.24
1965	3.09	.65	.30	.69	.06	.06	.20	.18	.15	5.37
1966	3.19	.67	.31	.70	.07	.06	.21	.18	.15	5.54
1967	3.34	.68	.31	.73	.07	.06	.22	.18	.15	5.74
1968	3.54	.68	.31	.75	.07	.07	.24	.18	.15	5.99
1969	3.80	.70	.32	.78	.07	.07	.25	.18	.16	6.33
1970	4.09	.73	.33	.80	.08	.07	.27	.20	.17	6.74
1971	4.31	.77	.35	.84	.08	.08	.29	.22	.17	7.11
1972	4.55	.80	.36	.88	.08	.09	.31	.23	.18	7.48
1973	4.81	.85	.39	.91	.09	.09	.32	.25	.19	7.90
1974	5.19	1.04	.50	1.01	.09	.10	.35	.37	.25	8.90
1975	5.65	1.20	.58	1.16	.11	.11	.38	.43	.29	9.91
1976	6.09	1.27	.61	1.22	.11	.11	.41	.47	.31	10.60
1977	6.41	1.34	.67	1.28	.12	.12	.44	.56	.33	11.27

1/ Computed by multiplying actual 1960 base year costs by the appropriate component wholesale price index in table 6.

2/ Actual component costs; used as base year.

that year. Actual labor costs were $2.97 per cwt, but would have been $6.41 without the indicated adjustments. Labor was less than half of total operating costs in 1977, but three-fourths of the total cost savings were realized in the labor component.

The cost for containers is the only major component for which actual costs kept pace with rising prices. Processors switched from glass to paper and then to plastic during this quarter century, and began packaging a greater percentage of their volume in larger containers. These two changes did not result in a net reduction in container costs, but they helped lower labor cost (labor for handling containers is included in the labor component and not in container component).

Other changes also were made by the industry that helped improve productivity and hold the line on unit costs. Adoption of bulk-milk coolers on farms permitted processors to discontinue the costly process of receiving milk in cans, which reduced both labor and supplies required to receive milk and to clean the plant. Improved coordination of milk assembly from farms allowed processors to obtain their milk supply in large tankers from a central supply, reducing requirements for labor, buildings, equipment, and supplies. Clean-in-place equipment contributed to the more efficient use of labor. The volume processed per plant tripled, with processors realizing economies of scale. As consumers purchased more milk from supermarkets, distributors discontinued home-delivery routes and shifted to lower cost wholesale delivery. Savings from some of these changes were partially offset by the increase in the cost of milk for processing, but total costs were held down.

Generally, dealers were better able to hold down costs when prices were rising moderately than when they were advancing rapidly. The effect of input price increases from 1960 to 1973 would have been to increase dealers' costs $3.04 per cwt (table 7), while actual costs rose only 3 cents. Input price rises would have increased simulated costs another $3.37 from 1973 to 1977, while actual costs increased $1.58. Part of this difference may be because the industry had realized the major portion of potential economies from technology advances by 1972, but it appears that the disruptive influence of rapid price changes made it more difficult for processors to hold the line on costs.

These cost comparisons are made for processor-distributors, but to some extent they also reflect adjustments throughout the industry. Various functions in the chain from producer to retailer must be performed sequentially, and within a very limited time span, so improved productivity in one segment of the fluid-milk industry often is closely related to and dependent upon concurrent changes in other segments.

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